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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,340	09/13/2005	Takayuki Abe	114/75034	6716
23432	7590	08/09/2007		
COOPER & DUNHAM, LLP 1185 AVENUE OF THE AMERICAS NEW YORK, NY 10036			EXAMINER CWERN, JONATHAN	
			ART UNIT	PAPER NUMBER
			3737	
			MAIL DATE	DELIVERY MODE
			08/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/549,340

Applicant(s)

ABE ET AL.

Examiner

Jonathan G. Cwern

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2809

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9/13/05 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 9/13/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

This office action is in response to the application filed on 9/13/05.

Currently, claims 1-21 are pending.

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 9/31/05 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: Display 20 is not found in the drawings, it is mentioned on page 27, lines 9-10 of the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and

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informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: In Figure 2, time phase reference value 102 is not found in the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to because several reference characters in the drawings do not agree with their labels in the specification. In Figure 5a, reference characters 551-560 are labeled incorrectly according to the specification (page 39, lines 15-16). In Figure 6, time phase reference value 102 is listed as start timing 102 in the specification (page 42, line 9). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures

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appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

6. The disclosure is objected to because of the following informalities:

On page 9, lines 15-16, the phrase "easily ad instantaneously" is incorrectly spelled. It is suggested to change the word "ad" to "and".

On page 14, line 11, "the sequencer 7" is incorrectly labeled. It is suggested to change the phrase to read "the sequencer 4" to remain consistent with the drawings.

On page 24, line 10, "A(156)" is incorrectly labeled. It is suggested to change the phrase to read "B(156)" to remain consistent with the drawings.

On page 40, line 21, the phrase "B(558)" is incorrectly labeled. It is suggested to change the phrase to read "C(558)" to remain consistent with the drawings.

On page 44, line 15, the phrase "step 709" is incorrectly labeled. It is suggested to change the phrase to read "step 708" to remain consistent with the drawings.

Appropriate correction is required.

Claim Objections

7. Claim 17 is objected to because of the following informalities: on lines 2-4, the phrase "said display means differs display of each of said measurement areas selected from display of other measurement areas not selected" is unclear. Please change the wording of the phrase to make the meaning more clear. Appropriate correction is required.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mistretta et al. (US 5713358) in view of Ho et al. (US 2002/0087069).

Mistretta shows, with respect to claims 1-21, means for dividing k space into high repetitive-frequency areas containing the origin and low repetitive-frequency areas not containing the origin (column 7, line 65-column 8, line 65), signal processing means for reconstructing an image using the k space data (column 8), a display (column 5, lines 20-40), labeling the time period of the sampled data so that it can be used to reconstruct the image (column 8, lines 25-40), reconstructing the image using the high frequency area measurement and a low frequency area measurement which are close in time (column 8 line 45-column 9, line 15); a lower frequency area is measured immediately after a high frequency area (column 8); all of k space is sampled (column 8); k space data is data of concentration information for a contrast medium injected into a blood vessel (column 10); k space comprises a slice encode direction, a phase encode direction, a readout direction, and k space is divided by a plane parallel to the readout direction (columns 7 and 8); projection processing on a two-dimensional plane after three-dimensional reconstruction (column 10, lines 30-50);

Mistretta fails to show, with respect to claims 1-21, comparing a time phase evaluation value with a predetermined threshold value; controlling the measurement sequence so that the high frequency area contains the time phase; predicting the timing from the time change of the time phase evaluation value, controlling the measurement sequence based on the timing predicted; determining the time phase after the measurement repetitions; the time phase value is a peak value of the k space data; the

time phase value is a value of data which has been fourier transformed; the threshold value is at least 1.8 times the baseline value of the time phase evaluation value; the threshold value is at least 80% of a maximum value of the time phase evaluation value; display has means for setting the threshold value; designating the time phase, selecting each measurement area; displaying the time phase evaluation value in a time series, a signal intensity change curve, a measurement sequence of the measurement areas, differing display of each measurement area selected from those not selected; and a time phase value is a value in which an artery is emphasized by contrast agent.

Ho teaches, with respect to claims 1-21, comparing a time phase evaluation value with a predetermined threshold value ([0037]-[0041]); controlling the measurement sequence so that the high frequency area contains the time phase (high frequency areas are also acquired with the same steps, [0045]-[0048]); predicting the timing from the time change of the time phase evaluation value ([0037]-[0041]), controlling the measurement sequence based on the timing predicted ([0037]-[0041]); determining the time phase after the measurement repetitions ([0037]-[0041]); the time phase value is a peak value of the k space data (the value is when the contrast agent enters the region of interest, the presence of the contrast agent will increase the value so that it is at its highest point, a peak [0037]-[0041]); the time phase value is a value of data which has been fourier transformed ([0029]); the threshold value is at least 1.8 times the baseline value of the time phase evaluation value (the threshold is preselected by the user, and so it can be selected to be any value, [0040]); the threshold value is at least 80% of a maximum value of the time phase evaluation value

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(the threshold is preselected by the user, and so it can be selected to be any value, [0040]); display has means for setting the threshold value, designating the time phase, and selecting each measurement area (the system is operator controlled, by any of various input devices, so that the operator could control any of these variables, [0026]); displaying the time phase evaluation value in a time series, a signal intensity change curve, a measurement sequence of the measurement areas, differing display of each measurement area selected from those not selected (a display will be capable of displaying any of these images, [0026]); and a time phase value is a value in which an artery is emphasized by contrast agent ([0037]).

Mistretta mentions labeling the time periods during which the k space data is obtained, and using the time periods to reconstruct the data at a later time. However, he does not go into further detail on how this is accomplished. He describes in detail how a threshold can be used to mark the time periods during which data is acquired. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have used a threshold to mark the time periods during which data is acquired, in the system of Mistretta, with the motivation that marking the time of the data acquisition will aid in reconstructing the high and low frequency areas, so that image will be easier for the physician to evaluate.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See attached Notices of References Cited sheet.

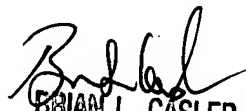
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan G. Cwern whose telephone number is 571-270-1560. The examiner can normally be reached on Monday through Friday 9:30AM - 6:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JC
7/26/07


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